

Envirosoft Systems Integration Terence Trefiak TERENCE TREFIK 51 3/6/2018 16:24:29
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NSPS OOOOa Monitoring
Case Study

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www.targetemission.com

Avoiding the use of the word "LDAR" as it has a historic connection with "fugitive emissions". Pneumatic device emissions are not fugitive emissions.

COMPANY

DETECTION

MEASUREMENT

MANAGEMENT

OFFICES- Houston, TX, Pittsburgh PA, Calgary AB

EXPERIENCE - currently perform LDAR and GHG services for over 550 facilities across USA, approx. 800 assessments/year

EXPERTISE - Subpart W GHG and LDAR (OOOO, OOOOa) monitoring using OGI

Detailed overview of Target Emission Services and the technology used for the 3 main service elements:

Detection

Measurement

Management

OVERVIEW

Review OOOOa requirements

Present Case Study data

Explore results, cost/benefits of program

NSPS 0000a

Midstream

No change for LDAR

Compressor Station

new or modified after September 18, 2015 - when a compressor is added or if one or more compressors is replaced with a greater total horsepower

conduct OGI within 60 days after startup and quarterly

Wellsite

Semiannual wellsite OGI inspections

NSPS 0000a

MONITORING PLAN

monitoring plan must be developed and implemented within a company-defined area (22 well sites, 210-mile radius of a central location)

DATA REQUIREMENTS

survey date, technician names

observation path (one time)

ambient T, sky conditions, maximum wind

instrument used

of leaks, # of DTM, UTM

of DOR and reasons

resurvey instrument

one or more digital photographs or OGI video (GPS)

dates of first attempt

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LEAK REPAIRS

Leaks repaired within 30 days up to 2- year DOR extension for certain repairs

if an unscheduled or emergency shutdown components would need to be fixed at that time (just changed to planned shutdown)

REPAIR CONFIRMATIONS

resurvey within 30 days of the repair using OGI, Method 21 including bubble tests when applicable

Additional 30 days for confirmation

QUESTIONS

What are the results of current OOOOa compressor station monitoring?

and volume of leaks

Duration and cost of monitoring

From quarter to quarter what are the differences in results

What is the repair performance and costs?

CASE STUDY SCOPE

Companies: 5 (large transmission companies)

of Facilities: 104

of Monitoring Events: 224 (2017-158, 2018-66)

Avg. # of Compressors: 2.4

Duration: OOOOa 2017 Q1-Q4 and 2018 Q1 (4.5 cycles)

Locations: OK, PA, TN, LA, TX, OH, NY, SC, WV

TECHNICIAN

1-person Crew with min. TARGET Tech L1 (2-10 years experience)

holds a detailed understanding of the various processes that are involved in the transportation and processing on natural gas.

is trained (certified) and experienced in the use of fugitive emission detection equipment;

has a minimum of 1000 hours of experience on the use of optical gas imaging

maintains required safety training and strong understanding of applicable TARGET Safe Operating Procedures; and

received performance audits to ensure compliance to our prescriptive fugitive emission assessment protocol

EQUIPMENT

FLIR GF320

Bubble Test Soln.

Data Management

LEAK DATA

Max Rate: 7.85cfm

Min Rate: 0.01 cfm

Mean: 0.12 cfm

STDev 0.31 cfm

Quantification: 20% HiFlow Sampler, 80% OGI Estimate

CASE STUDY

Quantitative Cost/Benefit

The Net Present Value using 10% discount rate and 2-year average repair life

Avg. monitoring time: 3.1 hours

Avg. costs fully inclusive (onsite monitoring, travel expenses, reporting)

Repair costs estimated based on leak component/type

Qualitative Cost/Benefit

SAFETY

22 leaks identified as potential safety hazard

12 Moderate

7 High

3 Extreme

EXPOSURE

Approx. 60% of leaks found in buildings and common work areas

ENVIRONMENT

59,000 tonnes CO2e per year emissions

FREQUENCY ANALYSIS

Average change in leak count between surveys: -18%

Average change in leak rate between surveys: -23%

Largest Count Increase: 1066%

Largest Rate Increase: 3800%

Largest Count Decrease: -90%

Largest Count Decrease: -96.9%

Reoccurring Leaks: 5%

Factors Affecting Changes/Variations

Turn around

Weather Conditions

Operating mode

FREQUENCY ANALYSIS

Leak Count Change

Count 1

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Count 2

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Count 3

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Count 4

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Count 1

Count 2

Count 3

Count 4

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Rate Change (cfm)

Rate 1

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Rate 2

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Rate 3

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Rate 4

C3

C4

C5

C6

C7

C8

C11

C12

C13

C15

Rate 1

Rate 2

Rate 3

Rate 4

C3

C4
C5
C6
C7
C8
C11
C12
C13
C15

Repair Metrics

Repair tracking quite active across numerous companies

Many repairs done near due date

Overall impressive responses

OVERDUE

DOR

REPAIRED ONSITE

WITHIN 5 DAYS

WITHIN 15 DAYS

16-30 DAYS

3%

3%

10%

9%

21%

54%

CONCLUSIONS

Significant economic benefit in terms of saved gas

Auxiliary benefits (safety, environmental)

Negligible reoccurring leaks

Repair activities were responsive and tracked well

Decrease in Leak and Rate amounts consistent with expected LDAR program evolution profile

Data would tend support quarterly leak inspections to increase the probability of monitoring each compressor in full operation mode when most leaks would be present with a possible reduction in frequency when steady state leak profile is reached

